Response to Comments on:

- **Ecology's Draft Revision of the TransAlta Best Available Retrofit Technology (BART) Documents, and**
- **Related Parts of the Regional Haze (RH) State Implementation Plan (SIP)**

This is a summary of the comments received during the public comment period and public hearing on the draft RH SIP along with Ecology's responses. Ecology accepted comments between October 17, 2011 and November 21, 2011. In cases where we received a number of comments on the same subject we provide representative examples.

In the fall of 2011, Ecology held a public hearing and took public comments on draft revisions of the TransAlta Best Available Retrofit Technology (BART) compliance order, TransAlta BART Technical Support Document (TSD), and related parts of the Regional Haze (RH) State Implementation Plan (SIP) to comply with the new law.

T. Comments from Southwest Clean Air Agency

Comment #1:

Condition 1.2 requires injection of ammonia or urea into a boiler when the boiler is above the "minimum SNCR operating temperature." I suggest that the permit include a provision that TransAlta identify the minimum SNCR operating temperature for each boiler, and where the temperature will be monitored, as part of the SNCR optimization study report required by Condition 5.2.2.1.

Ecology Response:

The Condition 1.2.1 has been revised to require the vendor to supply this information as part of its operating manual submittal to the company. During the second revision of the BART Compliance Order, the actual minimum SNCR temperature can be inserted into this condition.

Comment #2:

Condition 6.2 requires TransAlta to estimate ammonia emissions. Important parameters such as reagent concentration, reagent injection rate, and NO_x emission rate are identified. Currently TransAlta is required to continuously monitor the NO_x emission rate from each boiler and submit the monitoring results to Southwest Clean Air Authority (SWCAA) quarterly. I suggest that the estimated ammonia emission concentration, the reagent concentration, and reagent injection rate also be recorded for each hour of operation and reported with the quarterly report in the same way as NO_x emissions are. This will allow SWCAA to routinely review and evaluate SNCR operation between source test events. If a Continuous Emissions Monitoring System (CEMS) is used to measure ammonia emissions for compliance, then CEMS data should be submitted in lieu of these surrogate indicators of SNCR operation.

Ecology Response:

The language in section 6.2 (now numbered 6.1) has been revised slightly. Significant changes on ammonia emission monitoring have been made to Condition 8 with the addition of requirements for parameter monitoring in addition to periodic stack testing. Condition 12 was also modified to require submittal of the ammonia emission estimates.

Comment #3:

I understand there have been comments regarding what, if any, data substitution procedures should be used for NO_x emissions. I recommend that if data substitution is not used for missing NO_x data due to CEMS downtime, that a minimum data availability requirement be established in the BART Order. A requirement such as the one found in 40 CFR 60 Subpart Da "*…valid CEMS hourly averages shall be obtained for 90 percent of all operating hours on a 30-day rolling average basis*" would be appropriate.

Ecology Response:

Data availability requirements in WAC 173-400-105(8) apply to this facility, to the extent that the requirement is not superseded by monitor and data availability requirements of 40 Code of Federal Regulations (CFR) Part 75. No change is being made to the language of the Compliance Order.

Comment #4:

For periods of startup and shutdown when the bypass stack is being utilized, I recommend either excluding these emissions from the 30-day average, or establishing a conservative fixed value for the NO_x emission rate for the following reasons:

a. During low load operations such as startup and shutdown, Oxygen (O_2) concentrations will be relatively high while NO_x and Carbon Dioxide (CO_2) concentrations will be relatively low (close to ambient conditions). Any uncertainty in these measurements will be greatly amplified when calculating NO_x emissions in units of lb/MMBtu, and could even result in the indication that NO_x emissions are infinite (division by zero in the emission rate calculation) unless a default value is substituted in such instances. This uncertainty could occur even with properly operating continuous emissions monitoring system that meets all of the calibration and drift specification of 40 CFR 75.

b. A review of the 2009 and 2010 emissions inventory indicates that less than 0.3% of the total fuel was burned during unit startups. Shutdowns are generally quicker than startups.

   The NO_x emission rate (lb/MMBtu) during startup and shutdown is likely to be higher than during normal operation (except when only fuel oil is being burned) because combustion characteristics are not optimized and the SNCR system will not be operating when the boiler is too cold to support the NO_x reduction reaction. Several methods could be used to determine an appropriate NO_x emission rate value. Weighting the

uncontrolled AP-42 emission factors for oil and coal by the amount of oil and coal burned during startup in 2009 and 2010 yielded 0.31 lb/MMBtu in my calculation. Alternatively, the Maximum Emission Rate (MER) calculated in accordance with 40 CFR 75 could be utilized.

Ecology Response:

Condition 8 (now Condition 7) has been modified to only include start-up and shut-down emissions when coal is combusted. We have copied the approaches taken by Environemntal Protection Agency (EPA) in its New Mexico and North Dakota BART Federal Implementation Plans (FIPs) into the revised Condition 7 (previously Condition 8). Start-up NO_x emissions are now addressed with a "weighted average" approach to better accommodate start-up conditions.. Under this approach, low heat input periods burning coal which are typical of start-up conditions are given less weight in calculating the average emissions.

Comment #5:

The NO_x emission limit in BART Order 6426 applied to operations at or above 360 MW. The revised draft NO_x emission limit applies to all load conditions, including startup and shutdown. Because of the wider range of applicable operations, it would be more appropriate to utilize a weighted average of NO_x emissions (weighted by the firing rate in MMBtu/hr) rather than a straight arithmetic average for the following reasons:

c. A weighted average would prevent a period of boiler warmup, where the firing rate might be very low (e.g. 2% of the full load firing rate), from being as important as full-load operation.

d. A weighted average would better account for the fact that NO_x emission rates (in units of lb/MMBtu) are not constant across the load ranges.

e. A weighted average would directly link the emission limit in units of lb/MMBtu with the actual mass of NO_x emitted.

Language such as the following could be used:

"The 30 operating day rolling average NO_x emission rate is the average of each operating hour during the 30-day period, weighted by the average heat rate during that hour. The heat rate shall be expressed in MMBtu/hr. The heat rate for each boiler shall be determined in accordance with 40 CFR 75 for hours when only the flue gas desulfurization stack is in use. The heat rate for each boiler shall be determined by measuring the total amount of fuel oil and coal consumed during hours when the bypass stack is in use."

If this option is utilized, TransAlta should be required to submit the heat rate in MMBtu/hr for each hour of operation with each quarterly report.

Ecology Response:

Start-up and shut down emissions are now being addressed in a manner similar to the suggestion. See response to comment 4.

U. TransAlta

Comment #6:

For the reasons stated in TransAlta's comments to the Department dated August 8 and October 6, there is significant uncertainty whether an emission rate below 0.21 can be achieved by SNCR on the Centralia Units. Much of the uncertainty as to achievable NO_x reduction with the installation of SNCR on the Centralia Units results from higher operating temperatures in the upper furnace than optimal for SNCR operation due to burning Power River Basin (PRB) coal in Units designed for Centralia coal. The resulting high operating temperatures, as measured during the August 2011 High Velocity Temperature (HVT) testing performed by the SNCR vendor, result in shorter gas retention times at proper conditions for the SNCR reaction to take place within each furnace. Based upon the HVT test results and preliminary Computational Fluid Dynamics (CFD) modeling runs, the vendor has indicated that NO_x reductions of 25% will not be achievable with SNCR on the Centralia Units. However, as was stated in TransAlta's submission on August 8, the SNCR vendor will not be able to determine estimated NO_x reductions until after the completion and review of final CFD modeling results for both units.

In light of this uncertainty, the draft First Revision incorporates a requirement to perform an Optimization Study (Conditions 2.1 and 5.2.3) to determine whether lower limits are achievable following installation of the SNCR. This approach is consistent with EPA's policy on setting Best Available Control Technology (BACT) to meet New Source Review (NSR) limits which allows adjustments to emission limits based on post-construction performance. *See In re Prairie State Generating Company,* 13 E.A.D. 1 (EPA Environmental Appeals Bd. 2006) ("On two prior occasions, we have sustained a permitting authority's decision to issue a permit containing BACT limits that were subject to adjustment based on post-construction performance data. . . . [cites omitted]); EPA, "PSD and Title V Permitting Guidance for Greenhouse Gases," p. 32 (March 2011) (. . . [T]he permitting authority has the discretion to set a permit limits informed by engineering estimates, or to set permit conditions that make allowance for adjustments of the BACT limits based on operational experience.")

Ecology Response:

Thank you for the additional information.

Comment #7:

TransAlta does not believe that emission of ammonia as high as 10 ppm would be necessary for continuous operation of the SNCR systems and could be detrimental to plant operation. However, we agree that a higher daily limit during the optimization study would allow more

flexibility to determine the lowest combination of NO_x and ammonia emissions. We request that the daily limit(s) in 5.2.3.1 be set at the lower limit of 20 ppm to be consistent with Condition 2.1.1, not the 30 ppm show in 5.2.3.1. We also request that 5.2.3.2 be revised to read: "The maximum NO_x reduction possible within a 30-day average ammonia emission rate of 5 ppm; and" to reflect the 30- day average nature of the ongoing limit for ammonia.

Ecology Response:

In response to TransAlta's request, the ammonia emission limitation during testing for lowest NO_x emissions has been adjusted downward in Conditions 2.1 and 5.2.3. Similarly the testing to find the lowest emission rate possible with a 10 ppmdv 30 day average ammonia slip has been set to 5 ppmdv.

Comment #8:

Condition 4.3 is consistent with the language of RCW 80.80.040(1)(c)(ii) which states that the requirement to comply with the greenhouse gas performance standard by December 31, 2020 and December 31, 2025, does not apply to the baseload "facility" (Centralia Plant) if Selective Implementation Plan (SCR) "must be installed on any of its boilers." (The First Revision to the BART Order interprets this to mean that the Centralia Plant's boilers "permanently cease burning coal" by those dates. Condition 4.3.) Therefore, if Ecology or EPA (or a court in a judicial review action) determines that SCR must be installed on either of the Plant's boilers, then the deadlines for meeting the greenhouse gas performance standards or ceasing to burn coal do not apply to either boiler.

Ecology Response:

Thank you for your comments. It's Ecology's understanding that if SCR is required to be installed on any of the boilers then the deadlines for meeting the greenhouse gas emission standards in RCW 80.80.40(3)(c) do not apply to the facility.

Comment #9:

TransAlta understands that ammonia slip in the gas stream may be partially captured by the Sulfur Dioxide (SO_2) scrubber and end up in the plant wastewater. We request that Condition 5.1 include language to address potential adverse effects on plant effluent and Hanaford Creek. We suggest the following change to Condition 5.1: "…is reasonably achievable without significant adverse effect on mercury capture, boiler cleaning processes (aka sootblowing), ~~or~~ byproduct salability<u>, or plant wastewater effluent.</u>" We also suggest that the following language be added to Condition 5.2.2: "5.2.2.7 Evaluate the effect of ammonia increases in wastewater effluent ammonia, nitrate, and nitrite levels, if any."

Ecology Response:

The requested change is not being made to the Compliance Order. However, we encourage TransAlta to investigate affects on the concentrations of ammonia and nitrates in

the scrubber blowdown during the optimization testing program and how that may affect the discharge. If an investigation shows that there are adverse affects to the waste water discharge, the data will be reviewed and considered during the revision to the BART Compliance Order.

Comment #10:

The requirement to "permanently cease burning coal" in the two units at the Plant earlier than the end of their useful economic life as ordered in condition 4 of the Order already puts this plant at an economic disadvantage compared to other plants in the Western United States that have been required to install Low NO_x Combusion Level 3 (LNC3) and SNCR. Currently, no other generating stations are required to meet BART NO_x limits lower than 0.19 lb/MMBtu with LNC3 and SNCR technology as demonstrated in the BART Determination Support Document, Table E-1. It would be an added disadvantage to be required to meet NO_x emission limits lower than 0.19 for the shortened lifespan of the Centralia Plant. We request that Ecology modify condition 5.4.3 as follows: "However, the NO_x limitation will not be raised above the level in Condition 1.1.2 as it existed on the date of issuance of this Revised Order or reduced below 0.19 lb/MMBtu."

Ecology Response:

Ecology is not making the requested change to Condition 5.4.3. In its request for revision of the Compliance Order under Condition 5.5.1, TransAlta can present its rationale and supporting information that operating costs to meet a final NO_x limit based on the optimization study are infeasible or make the power produced uncompetitive in the power market.

Comment #11:

Condition 6.1 is not needed as it says essentially the same thing as Condition 8.1, so Condition 6.1 should be removed. The heading of Condition 6 should then be shortened to "Ammonia Monitoring".

Ecology Response:

We agree that Conditions 6.1 and 8.1in the Proposed Revised BART Compliance Order are duplicate conditions. Proposed Condition 6.1 has been removed from the Final Revised Compliance Order and the section title is changed.

Comment #12:

On September 21, EPA proposed language for the North Dakota BART FIP at 76 FR 58647 which states:

52.1825(e)(2) Method. (i) For any hour in which fuel is combusted in a unit, the owner/operator of each unit shall calculate the hourly average NO_x concentration in lb/MMBtu at the CEMS in accordance with the requirements of 40 CFR part 75. At the end of each boiler operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in

lb/MMBtu from the arithmetic average of all valid hourly emission rates from the CEMS for the current boiler operating day and the previous 29 successive boiler operating days.
(ii) An hourly average NO_x emission rate in lb/MMBtu is valid only if the minimum number of data points, as specified in 40 CFR part 75, is acquired by both the NO_x pollutant concentration monitor and the diluent monitor (O_2 or CO_2).
(iii) Data reported to meet the requirements of this section shall not include data substituted using the missing data substitution procedures of subpart D of 40 CFR part 75, nor shall the data have been bias adjusted according to the procedures of 40 CFR part 75.

These monitoring conditions apply to the 7 emission units for which the North Dakota FIP has NO_x limits listed. Additional EPA precedent for not using data substitution in calculation of emissions averages for BART compliance exists for the 5 emission units at the Four Corners Power Plant in Nevada. In the Four Corners FIP published May 2, 2011 at 76 FR 10543, EPA states: "49.23(i)(4)(v) If a valid NO_x pounds per hour or heat input is not available for any hour for a unit, that heat input and NO_x pounds per hour shall not be used in the calculation of the 30 day plant wide rolling average." So even though the forms of the NO_x limits may vary from State to State, there is no basis requiring data substitution be used to replace missing data when calculating emissions to determine compliance with BART limits.

TransAlta supports the Department's language very similar to that proposed by EPA as an amendment to 40 CFR 52.1825(e)(2)(i-iii) as it has been included in Condition 8 of the draft Order. Also, to be consistent with the EPA NO_x monitoring language and Condition 8, Condition 7 and the last sentence of Condition 8.3 which references Condition 7 should be deleted.

Ecology Response:

Changes, principally to Condition 7 (formerly Condition 8), have been made that meet the intent of the comment have been made.

Comment #13:

In the draft revision, Ecology has proposed removal of the 360 Megawatt (MW) minimum operating rate references in the current BART Order and proposes to make the BART limits applicable at all operating rates, including during periods when the SNCR system is not required to operate because the required reaction temperatures cannot be achieved. This is expected to occur during periods of startup and shutdown. To address this situation Condition 8.1 should be revised to state "For any hour in which ~~fuel is combusted in a~~ ammonia or urea is being injected pursuant to Condition 1.2 …". Alternatively, the word "fuel" in Conditions 8.1 and 8.4 could be replaced with the word "coal", to minimize the inclusion of the relatively insignificant emissions that may occur while firing a unit exclusively on oil during a startup or shutdown period.

TransAlta also suggests deleting the final paragraph of the section "Operating day versus calendar day" on page 94 of the BART Determination Support Document.

Ecology Response:

See response to comment #4.

Comment #14:

On page 4, paragraph 2 it appears that Ecology uses the term “SCR” where it intended to use “SNCR”.

On page 29, we suggest Ecology revise sentence in paragraph 4 to read: "The incremental improvement in visibility from adding SNCR to Flex Fuels is about 0.7 dv at the most impacted Class I area compared to Flex Fuels alone." The current reference to "at least a 0.2 dv" improvement refers to the least affected Class I areas and understates the benefits of SNCR.

On page 93, the paragraph titled “Emission Limit Reduction Basis should end as

“…or 0.21 lb/MMBtu (12.5 percent reduction).”

Ecology Response:

The suggested corrections and edits have been made. The text referenced on page 29 of the draft has been amended with greater explanation of the visibility improvement estimated to occur starting in 2013 and ending with the inclusion of optimized NO_x limitation in 2015.

Comment #15:

The Centralia Plant BART Order sets NO_x emission limits based on Low NO_x Burners (LNB) with Over-Fire Air (OFA), SNCR, the Flex Fuels Project, and coal content limits for nitrogen and sulfur based on Powder River Basin coal. Based on comments received by the Ecology during the adoption of the original Centralia Plant BART Order, we anticipate that comments will be made on the proposed RH SIP that BART for the Centralia Plant or reasonable progress requires additional NO_x control SCR. In response, it is important to emphasize that the Centralia Plant BART Order’s coal sulfur content limit actually achieves greater “reasonable progress” than would be achieved by NO_x controls alone. Specifically, the resulting sulfur dioxide emission reductions from the coal content requirements result in greater visibility improvement than the nitrogen oxide reductions that would be achieved by the NO_x controls in the proposed BART Order. Accordingly, NO_x reductions beyond those in the proposed BART Order are not necessary to meet the RH Program’s Reasonable Progress requirements.

Ecology Response:

Thank you for your view on additional NO_x reductions, BART and Reasonable Progress. Comments requesting the installation of SCR were not received.

Comment #16:

The conclusion that installation of SCR is not cost-effective is not disputed. Based on the site-specific cost estimate by CH2M Hill, the cost-effectiveness of NO_x reduction for the unit to be closed at the end of 2021 is $14,800/ton and the cost effectiveness-for the unit to be closed by the end of 2025 is $8400/ton. However, based on a cost estimate for the Navajo Generating Station, Ecology calculated $12,000/ton and $6400/ton, respectively.

TransAlta believes that the SCR installation cost estimates prepared by CH2M Hill in 2010 are the most accurate cost estimates for SCR at the Centralia Plant and that the lower estimates based on the NGS are not relevant to the BART determination and should be removed from the Support Document. If these cost estimates become an issue of concern to Ecology, TransAlta will provide additional information to support the accuracy of the CH2M Hill estimates.

Ecology Response:

Thank you for your comments. At this time Ecology does not need additional cost information.

V. Comments from United State Environmental Protection Agency

Comment #17:

General Comment on Order: As we understand it, the revised BART determination and associated Administrative Order for TransAlta includes an initial NO_x emission limit for SNCR of 0.21lb/MMBtu and ammonia slip limit of 10 ppmdv with an optimization study to determine if greater NO_x reductions are feasible. This approach is reasonable, however, the draft Order does not appear that Ecology or SWCAA are under an obligation to approve or disapprove the optimization study report or that TransAlta actually implement the optimization study results by a date certain. Thus, as reflected in language included below, EPA suggests that the Order provide that the optimization study report be deemed accepted within a specified time frame if Ecology and/or SWCAA do not act on it and that TransAlta will immediately implement the optimized operating parameters. EPA suggests that a date be established by which it is confirmed that the initial BART NO_x emission limit of 0.21 lb/mmBtu is the lowest limit SNCR can achieve or a revised lower limit based on the optimization study must be met.

Ecology Response:

Condition 5 has been clarified with a new condition 5.3 that clarifies Ecology and SWCAA to act on the Optimization study. The new condition gives the agencies 60 days to review and act on the report. The agencies are to request changes or accept the study by the end of the 60 days. The acceptance of the final report then triggers additional actions to revise the BART Compliance Order.

Comment #18:

Finding C.c. This finding is confusing. As written it is unclear what emissions are at issue and to what are they being compared. We suggest rephrasing along the lines; "Use of a sub- bituminous PRB coal or other coal that will achieve similar NO_x and S02 emission rates based on the sulfur and heat content of the coal to be determined as specified in condition 10."

Ecology Response:

Finding C refers to BART for nitrogen oxides. The four items listed as (a) through (d) are the description of the BART control technology for NO_x. The coal specifications are listed under condition 1.4 of the Compliance Order. Page 34 of the TSD discusses what would constitute an equivalent coal. The existing language is being kept.

Comment #19:

Condition 1.2.1. The minimum SNCR operating temperature should be specified in this condition.

Ecology Response:

This condition has been revised. See the response to Comment 1.

Comment #20:

Conditions 1.1.3 and 2.1.2. The intent of these conditions is not clear. If the intent is to exclude a boiler that does not operate from the calculation of daily average emissions, this seems reasonable. To improve clarity, these conditions could be replaced with the following: "Calculation of daily average emissions from units BW21 and BW22 shall be based on emissions from units that operated during each calendar day. If either unit did not operate during any calendar day, the emission rate of zero from that boiler shall not be included in the calculation of daily average emissions."

Ecology Response:

Condition 1.1.3 has been replaced by a reference to Condition 7 which addresses calculating the NO_x emissions average.

Condition 2.1.2 has been revised by replacing the last sentence from the proposed version with the suggestion.

Comment #21:

Condition 4.3. This condition appears to allow continued operation of both units if SCR is installed on a single unit. The language should be revised to allow continued operation of only those units equipped with SCR.

Ecology Response:

Staff from the Governor's Office and Ecology assisted with the writing the law that requires this condition. The condition is written based on Ecology's and the Governor's Office staffs' understanding of the state law requirement. The suggested revision does not match our understanding of the requirement in state law. See Comment 8 and our response.

Comment #22:

Condition 5.2.1.2. Suggest that the following sentence be revised as "the plan will be deemed accepted, and the owner will immediately implement the plan if Ecology and/or SWCAA do not respond by May 30 2013." Also it is not clear what happens if Ecology or SWCAA do not accept the optimization plan.

Ecology Response:

The condition has been modified by adding the "/or" suggestion. If SWCAA and Ecology staffs do not agree, it will be up to the managers to come to agreement. It is not in either agency's interests to disagree and delay the start of the optimization study.

Comment #23:

Condition 5.2.3.4. It appears that the units on the NO_x emission rate should be lb/MMBTU rather than ppmdv.

Ecology Response:

Thank you for pointing out the error. It has been corrected.

Comment #24:

Condition 5.3. This condition is very open ended. Ecology and SWAPCA are under no obligation to ever accept the optimization study report and it is not clear what happens if they don't accept it. Additionally, there is no deadline for when Transalta needs to start implementing the optimized operating parameters. We suggest adding the following sort of language to Condition 5.3:

"Upon written acceptance of the optimization study report by Ecology and SWCAA, the plant operations and maintenance manual(s) will be amended within 30 days to include the operating parameters reflecting the optimized ammonia or urea injection rates developed and operate according to the revised manual(s). The optimization study report will be deemed to be accepted, and the owner will immediately implement the optimized operating parameters if Ecology and/or SWCAA do not provide written approval of it within 60 days of receiving the optimization study report."

Ecology Response:

See response to Comment 17.

Comment #25:

Condition 5.3.1. We suggest adding a condition to require compliance with the amended operations and maintenance manual: "TransAlta will comply with the amended plant operations and maintenance manual(s), including the optimized operating parameters identified in the optimization study report as approved by Ecology and SWCAA."

Ecology Response:

The Air Operating Permit (AOP) for the facility already contains a requirement to follow the operations and maintenance manual. Failure to follow the operations and maintenance manual can be used as credible evidence of violations of permit terms. Since this language is already in the AOP we are not including it here.

Comment #26:

Condition 5.4.3. We suggest that this condition also include a statement that the ammonia emission limit will not be raised above the limit in Condition 2.1.1.

Ecology Response:

The suggestion has been implemented as new Condition 5.5.4.

Comment #27:

Condition 7. The provisions addressing missing data from the continuous emission monitoring system should include detailed provisions outlining backup parametric monitoring to be used for assurance of compliance during CEMS failure. Alternative options would include requiring installation of a backup CEMS system and/or requiring source testing for prolonged CEMS outages.

Ecology Response:

Condition 7 of the draft has been deleted in favor of addressing monitoring data identically to how EPA has addressed it in the North Dakota and New Mexico BART FIPs. See also response to comment 3 on monitor data availability.

Comment #28:

Specific comment on the BART Technical Support Document, Revised October 2011: Page 4, 2nd Paragraph- The visibility improvements cited here (as well as discussions of the BART analyses throughout the document) reflect a NO_x reduction of 25% attributable to SNCR even

though the Order requires only a 12.5% reduction to be achieved (from 0.24 to 0.21 lb/MMBtu). The BART support document does not appear to include an analysis of visibility improvements resulting from a 12.5% reduction due to SNCR. Since this revised BART determination requires only a 12.5% additional NO_x reduction attributable to SNCR, the visibility improvements and underlying analysis in the BART support document should reflect emission reductions to the corresponding limit of 0.21 lb/MMBtu.

Ecology Response:

Appendix I of the TSD has been amended to include a discussion of anticipated improvements in visibility as a result of the interim emission limitation. In short, the interim emission limitation is anticipated to produce a visibility improvement at all Class I areas within 300 km of the plant midway between the improvement from Flex Fuels and Flex Fuels plus SNCR as shown in Table 3-1 of the Technical Support Document.

W. Comments from Nathan Miller of the National Parks Conservation Association

Comment #29:

In Section 4.1 and 4.2 of the Order, we request that Ecology specify that the units must cease burning any fuel, including biomass, solid waste, or other combustibles, in addition to coal.

Ecology Response:

The underlying requirement in RCW 80.80.040 states the units must meet the state greenhouse gas emission performance standard. This could be done by burning only biomass. The requested change has not been made.

Comment #30:

This draft analyzes a 25% reduction in NO_x emissions from SNCR (to a 0.18 lbs/mmbtu limit), but only requires a 10% reduction (to a 0.21 lbs/mmbtu limit). For the reasons detailed in the report of Dr. Ranajit (Ron) Sahu (attached as Exhibit 1), we do not believe there is sufficient justification for this change. A 10% reduction to a limit of 0.21 lbs/mmbtu will not necessarily require any meaningful emissions reductions. The reasons given by TransAlta for changing their longstanding estimate of 25% reduction are vague and unsupported by evidence, as the relevant studies have not yet been completed. Ecology anticipates that if the SNCR vendor's computational fluid dynamics modeling were available, that a lower number would be in this draft revision. Further, a vendor guarantee is not required in order to set a BART limit. We request that the limit remain at 0.18 lbs/mmbtu until adequate justification that this limit cannot be met is produced via testing, modeling, or optimization.

We also note that the analysis is based entirely on 25% reduction and ammonia slip of 5 ppm. It is confusing to the public to represent these reductions and related visibility benefits when they will not in fact be met. We request that the limits analyzed match those which are in fact

required, and believe that this is in fact an element of any complete and meaningful BART review.

In addition, we request copies of the CFD modeling and any related test results as soon as they are available.

Ecology Response:

The interim emission limitation is not changed. The optimization study will determine the actual capabilities of the SNCR system installed and a final NO_x limitation will be established that reflects the actual capability of the system installed. If the final NO_x limitation differs from the limit in this order, the order will be revised to include the new limit.

Appendix I has been amended with information that estimates the visibility improvement that the interim limitation would achieve (see response to comment 28).

Our Public Disclosure Coordinator has told us that you will have to make a specific public disclosure request for the CFD modeling results and any related information.

Comment #31:

Regarding the timing and deadlines of the optimization study, we have three requests. First, the current draft includes no deadline for Ecology and SWCAA's review the final report produced by TransAlta. We believe that a 90 day deadline should be included for this critical portion of the optimization process. Without review and eventual acceptance by Ecology and SWCAA, the emission limits and procedural changes identified by the optimization process will not necessarily be enacted.

Second, we concur with Ecology's note on a prior draft that TransAlta should be able to produce the optimization plan prior to January 1, 2013. While we appreciate the requirement for a draft optimization plan, we ask that the deadline for submission of the final optimization plan to Ecology be changed to January 1, 2013 and that all later deadlines be subsequently adjusted.

Ecology Response:

See response to Comment 17 addressing acceptance of the final optimization report.

The scheduling of the optimization study is not being adjusted. The schedule needs to allow for periods of without operation due to excess hydro and wind power such as occurred in 2011.

Comment #32:

We support the inclusion of startup and shutdown emissions in emissions limits. Specifically, we support the use of a definition for boiler operating day as described in the BART Guidelines: "You should consider a boiler operating day to be any 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time at the steam

generating unit."[1] Ecology's BART Analysis and Order are required to follow these guidelines. This definition is identical to the definition used by EPA in its recent proposed FIP for North Dakota,[2] which includes the use of SNCR on certain units. It is also consistent with the definition specified in the New Source Performance Standards (NSPS) for fossil fuel fired steam generators at 40 CFR 60.41.

Ecology Response:

Thank you for your comment.

Comment #33:

The current draft removes a requirement for continuous ammonia emissions monitoring. This does not seem to be supported by the record. As Ecology notes, they have required ammonia CEMS on a combustion source with low levels of ammonia slip. Further, ammonia CEMS was required for the White Stallion plant in Texas in 2010, which uses SNCR and has an ammonia slip limit more stringent than that currently proposed for TransAlta.[3] Quarterly periodic stack testing seems insufficient for ammonia testing, particularly during the optimization study, when the interplay between NO_x emissions and ammonia slip are of primary interest. We request that Ecology revisit this issue and require continuous monitoring of ammonia.

In absence of continuous monitoring, we request that the permit provide additional clarity as to how specifically ammonia emissions will be calculated for compliance in between periodic stack testing. The draft is not clear as to whether the stack test value or an estimated value based on other continuously monitored parameters will be used for compliance (Section 6.2.5 and Section 6.3). Further, the related calculations are not specified.

Ecology Response:

We have added parametric monitoring requirements to the Order to 'fill in' an indication of compliance with the ammonia limitation between source tests. A method to estimate ammonia emissions based on parameter monitoring is not provided by Ecology. Which parameters are important (beyond reagent injection rate and reagent to NO_x ratio) are not known.

The Texas White Stallion plant is a new, pressurized circulating fluidized bed facility comprised of four identical units rated at 330 MW each. One aspect of a fluidized bed unit is the intrinsic SO_2 control provided by the use of limestone as the media in the boiler. As a result, the SO_2 concentration arriving at the ammonia monitor will be lower making the use of an ammonia CEM more viable, as indicated in the Institute of Clean Air Companies information on the use of ammonia CEMs.

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[1] 40 CFR 51, Appendix Y, Section V

[2] 76 FR 58647

[3] White Stallion is limited to 10 ppm hourly and 5 ppm annually. See attached permit at pdf 74 and 88.

Comment #34:

We believe that the optimization plan and the results of the optimization study should be made available for public review and comment. The specific elements of the plan (e.g. "acceptable maximum ammonia content of fly ash" or "the optimization process to be followed") and its results (i.e. the final emission limits) have significant bearing on the public interest and the outcome of this process. At a minimum, we request a copy of the optimization plan and its results as soon as each is available, and we request that the same be sent to the affected Federal Land Managers (FLMs).

Ecology Response:

The optimization study plan will be a public document that can be requested of any of the 3 parties identified in Condition 5.2.1.1. In order to expedite the initiation and completion of the study, a formal public process surrounding the optimization study plan is not proposed. However, timely comments submitted on the draft study plan will be considered to forward to TransAlta to be addressed in the final plan.

The results of the optimization study are to be included in a second revision to the BART Order. At that time the results of the study will be publically available for review and comment as the results are incorporated into the second revision to the BART Order. Equivalently, the FLMs will have a mandatory review of the draft second revision to the BART Compliance Order. A formal public comment period on the second revision to the BART Compliance Order will also occur.

At such time as the optimization study plan and the study report are available, you may file a public disclosure request for the materials.

Comment #35:

The draft provides for a data substitution method that differs from EPA's Clean Air Markets Database (CAMD), meaning that unaltered CAMD data would not be able to show compliance with emission limits. CAMD is a simple means by which the public can easily determine compliance. We request that the emissions data relevant to TransAlta's compliance be made available in a similarly accessible and public way, if the CAMD data will no longer be an indicator of compliance.

Ecology Response:

At this time neither Ecology nor SWCAA have a mechanism to provide CEM data we receive in a manner similar to what EPA has provided in CAMD. Depending on future resource availability to implement a similar system, this may change in the future. However, any monitoring information we receive may be requested at such time it is available.

Comment #36:

We continue to support the use of unit-by-unit limits rather than plantwide averaging; the inclusion of a mass based limit, such as a ton per year limit; either explicit inclusion of malfunction emissions in overall emission limits or separate numeric limits for malfunction emissions; and the use of percent reduction from SCR that is representative of the technology's highest capability (>90%).

Ecology Response:

Ecology will continue to utilize a plant average approach to the emission limitations like EPA did in the San Juan Generating Station BART FIP. Similarly we are not adding a ton per year limitation or establishing emission limitations for malfunctions. We assume the statement about SCR is an editing artifact.

X. Comments from Dr. Ranajit Sahu, Consultant to the National Parks Conservation Association

Comment #37:

Ecology does not appear to have rigorously evaluated the capabilities of SNCR to reduce NO_x from power plant boilers of similar design and size or considered the results of the 2007 Black & Veatch combustion modeling analysis for the Flex Fuels Project.

Ecology Response:

Ecology evaluated the capability of SNCR to reduce $_{NOx}$ as part of the original BART determination for the plant, even though SNCR was not required in that Determination. At that time we evaluated the available reports on removal capability, system design considerations and usage of urea versus ammonia. In the current revision, we did not include the results of the Black & Veatch study since we had access to multiple years of information on the actual implementation of Flex Fuels, rendering the Black & Veatch combustion analysis irrelevant.

The removal rate of 25% evaluated in the Company BART analyses was a planning level analysis based on generic literature removal values. It was not based on an analysis of the NO_x reduction capability of SNCR at the TransAlta power plant. An appropriate plant level analysis of the capabilities of SNCR at the TransAlta power plant will only become available upon completion of the SNCR vendor's CFD modeling and preliminary design analysis.

The revision includes an optimization study that was requested by the environmental groups after passage of the amendments to Chapter 80.80 RCW in 2011. The purpose of the optimization study is to determine the actual capabilities of the SNCR system installed, including all boiler and fuel dynamics that affect maximum NO_x reduction.

Comment #38:

The NO_x emission limit proposed by Ecology is a less than 10% reduction from actual emission rates at the plant, using monthly CAMD data as a surrogate for 30 day rolling averages.

Ecology Response:

As noted in Dr. Sahu's comments the interim NO_x limitation is lower than the limitation suggested by the company. We chose this interim limit value based on a review of the plant data submitted to EPA for the federal Acid Rain Program. While higher than expected based on the BART analyses submitted by the company, the interim NO_x limit is one that the EPA emissions data indicate will require the SNCR system to be operated.

Emission limitations in permits and compliance orders are not set at the average actual emissions capabilities of a source. Instead, emission limits reflect the actual emissions rate when using a particular emission control and the hourly/daily/monthly variability of those emissions. While reducing emissions or the impact of new emissions is important aspect of protecting air quality, setting an emission limitation that can only be achieved half of the time is not good permitting practice.

Ecology did evaluate the CAMD data in establishing the interim emission limitation, including the effects of both the Acid Rain Program data substitution requirements and the proposed data substitution requirements. This evaluation is reflected in statements contained in Appendix I of the TSD.

The NO_x limit in the revised BART Compliance Order is an interim limitation that will be adjusted at the completion of the optimization study. The requirement to install SNCR comes from state law and does not require a justification of cost effectiveness to implement.

The BART Compliance Order also requires both coal fired units to cease burning coal, one unit by the end of 2020 and the other unit by the end of 2025. Assuming that SCR is not required to be installed, after 2025 the $_{NOx}$ emissions will drop to 0.00 lb/MMBtu, plant wide average.

Comment #39:

Ecology appears to have accepted 'speculative' reasons as support for an emission limitation higher than 0.18 lb/MMBtu. The analysis is not supported by plant specific engineering data.

Ecology Response:

Ecology did not accept 'speculative reasons' for the emission limitation. We did reiterate TransAlta's concerns. That portion of the TSD discussing these 'speculative' reasons has been revised to better reflect our views on the subject.

We would have preferred to have plant speficic engineering data. The state law that results in the schedule to cease burning coal in the boilers and to install SNCR has a specific timeframe

requiring this revised BART Compliance Order to be issued before the end of 2011. At the time of passage of the law, the plant was not in operation due to an excess of hydro and wind power in the Northwest. The company sent out a request for proposals for the design and installation of an SNCR system shortly after passage of the law. The selected vendor could not acquire the temperature and velocity profiles or any other operational information needed for CFD modeling of the boilers until late August or early September after plant operation had resumed.

As a result, the Revised BART Compliance Order contains a system optimization requirement that will result in a resetting of the NO_x emission limitation at the conclusion of the study program. The NO_x emission limitation in the second revision to the BART Compliance Order will be based on plant specific information rather than generic observations of system capability in other settings.

Y. Other Written Comments Received

Comment #40:

I see you reference TransAlta coal fired plant and want to reduce emissions, that is good. The question/comment I have in regard to visible emissions/fine particulates is why the Forest Service (FS) is allowed to burn every fall releasing pollutants into the air without regard to the air stagnation. The air quality is very poor during the prescribed burns the FS is allowed to do and almost yearly our air quality suffers.

Ecology Response:

Under state law the Washington State Department of Natural Resources (DNR) serves as the Smoke Management Plan (SMP) administrator and is responsible for managing smoke emissions from silvicultural forest burning. The SMP "applies to all persons, landowners, companies, state and federal land management agencies, and others who do outdoor burning in Washington State on lands where DNR provides fire protection or where such burning occurs on federally managed, unimproved forestlands and tribal lands of participating Indian nations in the state" (1998 Smoke Management Plan, page 5). FS burning is regulated by the DNR. You can contact DNR for more information at (360) 902-1000.

Comment #41:

These people, obviously, do not understand we need to create power, use power to exist ourselves.

Last, I support keeping our power cost as low as possible - and hope other people, that don't like power generation, would go live in the woods without power - water - normal conveniences - long enough to realize how wonderful having them are.

Ecology Response:

Ecology appreciates your support of our work. We do strive to balance the effectiveness and cost implications as we work on and issue permits.

Comment #42:

As someone who loves the national parks of the Northwest, I am writing to ask that you allow TranAlta to continue to operate through the next decade. The pollution levels from the plant meet current requirements and my family and I are happy with that.

Ecology Response:

The current agreement with TransAlta allows its operation through 2025, another fourteen years. That allows it to operate through the next decade.

Comment #43:

I am writing to ask that you control emissions from TransAlta's power plant in Centralia, WA as much as possible between now and 2025, when the plant is expected to fully close. I also encourage you to make sure that the pollution control technology actually results in less air pollution so that our parks and communities will see healthier, clearer air as a result of your actions.

Specifically, I urge you to require, as a starting point, the full 25% reduction from current emissions that Ecology expects will result from the use of the selected pollution control, to a limit of 0.18 lbs/mmbtu. It doesn't make sense to start with a limit that allows 50% more pollution, if we expect the technology to do much better.

Second, I support optimizing pollution reductions from this technology once it is installed. If additional reductions are achievable, they should be made enforceable as improved permit limits. I ask that each step in this process have an identified deadline so we don't get sidetracked on the path to cleaner air.

Mount Rainier, North Cascades, and Olympic National Parks and our communities will see healthier, clearer air as a result of your actions.

Ecology Response:

These comment letters share a common theme – they each support the regulation of the TransAlta power plant, most of them support the full 25% reduction from the current emission levels along with enforceable permit limits and an identifiable timeframe for each step in the implementation plan.

Many of the letters call out national parks that are highly valued by the authors. They express a desire to see the air pollution cleaned up as quickly as possible. The desire to see TransAlta

clean up its' emissions for the benefit of all, especially children, the elderly, and those with compromised immune systems is supported by many authors.

Ecology anticipates that the proposed pollution controls put into place at TransAlta will result in cleaner, healthier air, a benefit for all of our citizens and the national parks. Our thanks to each of you for taking the time to share your concerns and suggestions.

Z. Comments received at the Public Hearing

Comment #44:

National Parks Conservation Association (NPCA) supports the State legislation and the revised RH SIP, compelling the shutdown of the two units of TransAlta's facility in 2020 and 2025, respectively, and the use of emission-control technology in the meantime.

However, we also ask for improvements to Ecology's plan to further reduce the plant emissions in order to protect the air quality at Olympic, the Cascades and Mount Rainier national parks in the intervening years.

We ask Ecology to limit harmful pollution as much as possible. Specifically we ask Ecology to require, as a starting point, a 25 percent reduction from current emission levels to a limit of 0.18 pounds per MMBTU.

Ecology says that 30 percent reduction may be possible and our interest is in ensuring that the technology operates to its full capacity. Ecology's proposed limit is barely a reduction from current emissons.

NPCA supports optimizing the equipment and process once it's installed. We ask that the results of this optimization process be made enforceable. We specifically request that the deadline for ecology's review of the optimization results be included. The NPCA supports the inclusion of deadlines and asks for a system to ensure public transparency of each step of this optimization process.

We support efforts to minimize the economic impact of the plant's closing.

It is our hope that these will result in cleaner, clearer, healthier air in our parks, homes and communities for the next 14 years.

Ecology Response:

Thank you for your comments.

The removal rate of 25% evaluated in the Company BART analyses was a planning level analysis based on generic literature removal values. It was not based on an analysis of the NO_x reduction capability of SNCR at the TransAlta power plant.

The revised Compliance Order includes an optimization study that was requested by the environmental groups after passage of the amendments to Chapter 80.80 RCW in 2011. The purpose of the optimization study is to determine the actual capabilities of the SNCR technology installed, including all boiler and fuel dynamics that affect maximum NO_x reduction.

After the optimization study is complete a final NO_x limitation will be established. This final limit will reflect the actual capability of the SNCR system at this facility. If the final NO_x limitation differs from the limit in this order, the order will be revised to include the new limit. Ecology estimates the second revision will occur in 2015.

AA. Commenter Index

Name	Affiliation	Comment #
	Southwest Clean Air Agency	1 - 5
Brian Brazil	TransAlta	6-16
Debra Suzuki	U.S. Environmental Protection Agency	17-28
Nathan Miller	National Parks Conservation Association	29-36
Dr. Ranaji Sahu	National Parks Conservation Association	37-39
Mark Hoefner	Chelan PUD	40
Collin Summers		41
Mr. Dean Warren		42
National Parks Conservation Association (NPCA) members and members of the public	NPCA	43
David Graves	National Parks Conservation Association	44